EFFECTIVENESS OF HOFFMAN'S EXERCISE ON LEVEL OF BREASTFEEDING AMONG POSTNATAL MOTHERS WITH NIPPLE DEFECTS IN SELECTED HOSPITALS, KANYAKUMARI DISTRICT

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CERTIFICATE

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(STEPHY S. GODFREY)

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ABSTRACT

A study was conducted to evaluate the effectiveness of Hoffman's exercise on level of breastfeeding among postnatal mothers with nipple defects in selected hospitals, Kanyakumari District.

Pre experimental one group pre test and post test design was adopted and the study was conducted at PPK hospital, Marthandam and Vijayakumar hospital, Swamiyarmadam. Thirty samples with nipple defects were selected by purposive sampling method. Pre test was done on the first day of delivery. Via Christi Breastfeeding Assessment tool was used to assess the level of breastfeeding. Hoffman's exercise was taught to the mothers and the post test was done on the fifteenth day.

Majority of the mothers, 13 (43.33%) belonged to the age group of 23-26 years, 13 (43.33%) of them had normal vaginal delivery, 16 (53.34%) had gestational age between 34 and 37 weeks at the time of delivery, 16 (53.34%) of them were educated up to graduate level, and 26 (86.66%) had not done antenatal preparation of nipples.

During the pre test among 30 mothers 13 (43.33%) had inadequate level of breastfeeding and 17 (56.67%) had moderate level of breastfeeding. In the post test 16 (53.34%) had moderate level of breastfeeding and 14 (46.66%) had adequate level of breastfeeding. There was a significant difference in the pre test and post test level of breastfeeding.

There was no association between the post test levels of breastfeeding with the selected demographic variables. Researcher concluded as per the study that the Hoffman's exercise, which is safe, simple and painless, will improve the level of breastfeeding. This study statistically proved the effect of Hoffman's exercise on level of breastfeeding among postnatal mothers with nipple defects.

CHAPTER I

INTRODUCTION

Pregnancy is a journey of creating new life. Motherhood makes this journey memorable and happy. During pregnancy the mother and baby are considered a single unit because the baby gets the essential nutrition from mother through the placenta. At birth this bond is replaced by breastfeeding. Breastfeeding is a completely natural way of feeding the baby. Numerous health benefits have been proven to pass from mother to child through breast milk. It is the ideal food for the baby. Moreover, breast feeding also allows an emotional bond that cannot be matched with anything else.

Breast milk is the only perfect balanced diet for babies till six months of age and it has to be continued as long as desired by mother along with complementary foods **(American Academy of Pediatrics, 2002).** Colostrum is the first milk, yellow in color secreted by breast soon after delivery. It is referred as "liquid gold" as it is high in protein, low in sugar and fat, thus making it easy to digest. Breast milk contains certain antibodies that are helpful in binding the virus and bacteria that enter through the gut and other mucus membrane. It contains lysozyme and lactoferrin, antibacterial enzyme which protect against a host of infectious agents, including E.Coli and staphylococcus. Also it has increased level of lactose, cysteine and cholesterol necessary for brain and nerve growth.

Breastfeeding save lives. The World Health Organization (2013) reports that exclusive breastfeeding until six months of age could prevent the deaths of more than 200,000 infants every year. Breast feeding supports a child's ability to learn, diminishes the risk of malnutrition and helps prevent obesity and chronic diseases later in life. It also helps in birth spacing, recover fast from giving birth and return to their pre pregnant weight sooner. Evidence shows that they also experience less postpartum depression and also have a lower risk of ovarian and breast cancers later in life.

A mother who is breastfeeding for the first time is in a vulnerable position and requires support, encouragement and knowledgeable assistance. There are many possible breast abnormalities that breastfeeding mothers may encounter. Identifying these issues is very important to continue a healthful breastfeeding relationship with the child. In addition to motivating mothers to breastfeed, obstetricians must ensure that pregnant women are physically prepared to nurse their infants. An often neglected area is the detection and correction of anatomical abnormalities of the nipples. Examination of the nipple and areola is important to identify any anatomic abnormalities.

The abnormalities of the nipple include long nipple, short nipple, abnormally large nipple, flat and inverted nipple and cracked nipple. Such abnormalities may cause difficulties to feed. One of the abnormalities that affect most of the mothers is flat or inverted nipple. It is commonly seen in primi para mothers. Flat or inverted nipples are mostly caused by adhesions which never opened up naturally during puberty resulting in abnormal nipples. During nursing there will be some pain as the nipples are pulled out.

An inverted nipple is a condition where the nipple, instead of pointing outwards, is retracted into the breast. This is caused by fibrous bands connecting the nipple to the underlying breast tissue. In many cases these bands will loosen due to the hormonal changes of pregnancy and the nipples will become everted during pregnancy. In some cases, the nipple will be temporarily protruded if stimulated, but in others, the inversion remains regardless of stimulus. There are different grades of inverted nipples. The grade I inverted nipple is easily pulled out, maintains its projection fairly without traction. The grade II inverted nipple can be pulled out, but after releasing traction, the nipple tends to fall back and invert again. In case of grade III, the nipple is inverted severely. It is difficult to physically force the nipple out and hold it there.

Breast engorgement is a common problem seen in mothers having flat or inverted nipple. If left uncorrected, it may lead to difficulty in breastfeeding and cracked nipple. Some of the interventions that have been recommended to bring out inverted nipples include breast shells, breast pumps, nipple shields, cosmetic surgeries and Hoffman’s exercise. Breast pumps are expensive and they can’t provide steady pressure. Nipple

shields give nipple confusion to the baby and also carry the risk of infection. Cosmetic surgeries are expensive and breast pumps are found to be ineffective in some studies.

Background of the study

It is universally agreed that breast milk is the preferred method of feeding a newborn. Since it provides numerous health benefits to both mother and infant, it remains the ideal nutrition source for infants through their first year of life. Babies should be started on the breast as soon as possible after birth. It helps in stimulating the production of breast milk which is the baby's first immunization.

United Nations International Children's Emergency Fund **(2013)** reported that 39% of infants in developing countries are exclusively breastfed for six months and 34% in least developed countries are breastfed exclusively for six months. The National family health survey (2012) revealed that the rate of breastfeeding in TamilNadu is only 55.3%. It is important to deal with problems faced by mothers during breastfeeding as they may frequently result in the stoppage of breastfeeding.

A descriptive study was conducted by Lewellan (2006) on breastfeeding support and early cessations among 379 women in the United States. The study showed that the common reasons in early cessation of breastfeeding includes nipple pain, latch difficulties, personal reasons, drugs and illness of the mother or newborn.

Several common problems that may arise during the breastfeeding period, such as breast engorgement, plugged milk duct, breast infection and insufficient milk supply, originate from conditions that lead the mother to inadequate emptying of breasts. Incorrect techniques, no frequent breastfeeding and breastfeeding on scheduled times; pacifiers are important risk factors that can predispose to lactation problems. The adequate management of those condition is fundamental, as if not treated they frequently lead to early weaning.

Nipple is the most sensitive part of the body and any type of stimulation will raise the nipples making them more prominent. But there are nipples that don't stand out

much from the areola and do not protrude during stimulation. Inverted and flat nipples are reported with an incidence of 9.8% among primi mothers globally.

In order to breastfeed effectively, the nipple need to be able to drawn to the back of the baby's mouth. Without this flexibility, the nipple is considered as flat or inverted nipple and the baby may not keep the nipple in mouth. In addition, the lacteal sinuses under the areola will not be able to bring within reach of the baby's jaw so that the breast cannot be milked effectively. Flat or inverted nipples are a concern for most mothers who have to breastfeed their babies for the first time. It is because inverted nipples are difficult to be latched on by the baby for the purpose of feeding.

An unpublished observational study was conducted by Gayathri Priya(2004) in antenatal Outpatient Department, Sri Ramachandra Hospital, Chennai, to assess the prevalence of breast problems among 96 nulliparous mothers during antenatal period. She found that 46% have breast problems of which 17.7% are flat nipple. It has been observed that many women need factual information, skill development on effective breastfeeding practices. So midwives need to assertively support the mothers and suggest supportive measures to accomplish successful breastfeeding.

Flat or inverted nipple is a source of repeated irritation and inflammation and interferes with breastfeeding. In addition, its abnormal appearance may cause psychological distress. With consideration of its underlying pathophysiologic components and severity, a number of techniques have been introduced for correction of this anomaly. Most of these techniques involve extensive skin incision around the nipple that may jeopardize the blood and nerve supply to the nipple or create much scar tissue that is esthetically objectionable.

The Hoffman's exercise is a manual exercise that may help break adhesions at the base of the nipple that keep it inverted. It was introduced by Hoffman in the year 1953. The thumbs of both hands are placed opposite to each other at the base of the nipple. The thumbs are pulled away from each other gently but firmly. This is done up and down and sideways. This exercise can be done up to five times a day. It can be done during pregnancy to prepare the nipples, as well as after the baby is born in order to draw them

out. This exercise can be used after discussion with the health care provider because it may cause pre mature labor if done in prenatal period. But it can be safely practiced immediately after delivery since postnatal interventions have more effectiveness towards nipple correction than that done in prenatal period.

Significance and need for the study

Breastfeeding has been important since the beginning of mankind. Encouraging women to breastfeed presents a major challenge to health care professionals in the recent years. Breastfeeding success depends on the appropriate attachment of the infant on the breast, in which the nipple and much of the areola (0.5 to 1 cm) are drawn well into the baby's mouth. Anatomical variations of the breast, including flat nipple, inverted nipple, large nipple etc. may act as barriers for the baby to latch on effectively and hence difficulty in breastfeeding.

In women who are pregnant for the first time, it is very common for the nipple not to protrude completely. About 25 to 38% of the women who are pregnant for the first time have nipples that don't protrude well of which 10 percent are considered as inverted nipples. A truly inverted nipple is caused by adhesions at the base of the nipple that bind the skin to the underlying tissue. While the skin become more elastic during the third trimester of pregnancy in preparation for nursing, some of the cells in the nipple and areola may stay attached.

Inadequate preparation for breastfeeding during antenatal checkups is one of the greatest bottle necks in successful lactation. The breast should be assessed during pregnancy to identify flat or inverted nipples. About one third of pregnant mothers will experience some degree of inversion, but as the skin changes and becomes more elastic during later weeks of pregnancy some mothers get their nipple protruded and some others still have the problem. Truly flat or inverted nipples can be identified by means of performing a pinch test. The breast should be hold at the edge of areola between the thumb and index finger. It is pressed gently about an inch behind the nipple. If the nipple protrudes, it is a normal nipple. If it does not protrude or become erect, it is considered as flat and if it retracts or disappears, it is inverted.

A study was conducted in Srilanka regarding incidence of breast and nipple abnormalities among primi gravid women. In 956 mothers identified, 768 had normal breasts and 188 had breast abnormalities of which 80 are flat or inverted nipples.

A survey by Lall and Kamawath on 1365 women who presented for prenatal care at JLN Hospital in Ajmer, India, indicated that only 6 (0.4%) were given advice about nipple care, and this was only because these 6 mothers specifically sought consultation on this issue. Nipples were not routinely checked in any cases. Another review of 52 cases of mothers with nipple problems found that only 3 (6%) of these women were exclusively breastfeeding at discharge from the hospital. Most of these women were primi para that were either unaware of their problem or embarrassed to discuss it with their obstetrician. Greater attention to this area on the part of medical personnel could help prevent lactation failure in the postnatal period.

Various surgical procedures to correct flat and inverted nipples have been proposed. Most of them involve releasing retractile ducts and fibrous bands at the base of the nipple. However, these techniques can cause injury to normal lactiferous ducts and sensory dysfunction. Breast shells and nipple shields are commonly prescribed for correcting the nipples but studies have shown that breast shells are expensive and nipple shields can cause infection.

During the clinical experience the investigator came across certain mothers having flat or inverted nipples and so there was difficulty in latching for the baby. Since the breast was not emptied at frequent intervals, breast engorgement develops which ends in lactation failure. The mothers were unaware of the preparation of nipples before breastfeeding. The Hoffman's exercise is a technique that helps in drawing out the flat and inverted nipple. This method is advantageous over other methods because it can be performed by the mother herself at any time and it costs nothing. It is safe, simple and painless. All these factors motivated the investigator to do a study on effectiveness of Hoffman's exercise on improving level of breastfeeding among postnatal mothers with flat and inverted nipples.

Statement of the problem

A pre-experimental study to evaluate the effectiveness of Hoffman's exercise on breast feeding among postnatal mothers with nipple defects in selected hospitals, Kanyakumari district.

Objectives

- To assess and compare the pre test and post test level of breastfeeding among postnatal mothers with nipple defects.
- To evaluate the effectiveness of Hoffman's exercise on level of breastfeeding among postnatal mothers with nipple defects.
- To associate the post test level of breastfeeding with selected demographic variables.

Hypothesis

$H_{1:}$ There is a significant difference between the pre and post test level of breastfeeding among postnatal mothers with nipple defects.

$H_{2:}$ There is a significant association between the post test level of breastfeeding and selected demographic variables of postnatal women with nipple defects.

Assumption

Hoffman's exercise may improve the level of breastfeeding for postnatal mothers with nipple defects.

Operational definitions

- **Evaluate:** Evaluation refers to the identification of the difference between pre test and post test level of breastfeeding and finding the effectiveness of Hoffman's exercise on level of breastfeeding among postnatal mothers with nipple defects.
- **Effectiveness**: Effectiveness is the significant increase in the post test level of breastfeeding among postnatal mothers with nipple defects and can be measured in comparison with the pre test.

- **Nipple Defects**: Nipple defects refer to any abnormality of the nipple like flat nipple or inverted nipple that may affect the level of breastfeeding in the postnatal mothers as measured by Via Christi Breastfeeding Assessment Scale.
- **Hoffman's Exercise**: Hoffman's exercise is the stretching maneuver that helps to pull the flat and inverted nipples out. It is done by placing the thumb of both hands opposite to each other at the base of the nipple and gently but firmly pulling the thumbs away from each other. Then the thumbs are rolled at the base of the nipple. It is repeated up to five times a day and for 15 days.
- **Postnatal mothers**: Refers to the primi para mothers who have nipple defects above the age of 18 years.

Delimitation

The study is delimited to

- 4 weeks of data collection
- Primi para mothers

Projected outcome

The Hoffman's exercise will be useful to the postnatal mothers with nipple defects, enabling them to improve the level of breastfeeding.

Conceptual framework

A conceptual framework can be defined as a set of concepts and assumptions that integrate into a meaningful configuration (Fawcett, 1994). The conceptual framework facilitates communication and provides a systematic approach to nursing research, educational status, administration and practice. Conceptual models attempt to represent reality with a minimal use of words.

The conceptual framework selected for this study is **Wiedenbach's Helping Art of Clinical Nursing Theory (1964).** This theory has three factors.

1. Central purpose
2. Prescription
3. Reality

i. Central purpose

It refers to what the nurse want to accomplish. It is an overall goal towards which a nurse strives.

ii. Prescription

It refers to plan of care for a patient. It will specify the nature of action that will fulfill the nurse's central purpose.

iii. Reality

It refers to the physical, psychological, emotional and spiritual factors that come into play in situations.

The five realities identified by Wiedenbach's are agent, recipient, goal, means and framework.

The conceptualization of nursing practice according to this theory consists of three steps as follows,

Step-I: Identifying the need for help.

Step-II: Ministering the needed help.

Step-III: Validating that the need for help was not met.

Step-I: Identifying the need for help

The investigator identified the postnatal mothers with nipple defects who need appropriate measure to improve level of breastfeeding.

Step-II: Ministering the needed help

After identifying the need the intervention will be provided.

Agent: Investigator.

Recipient: Postnatal mothers with nipple defects.

Goal: Improvement in level of Breastfeeding.

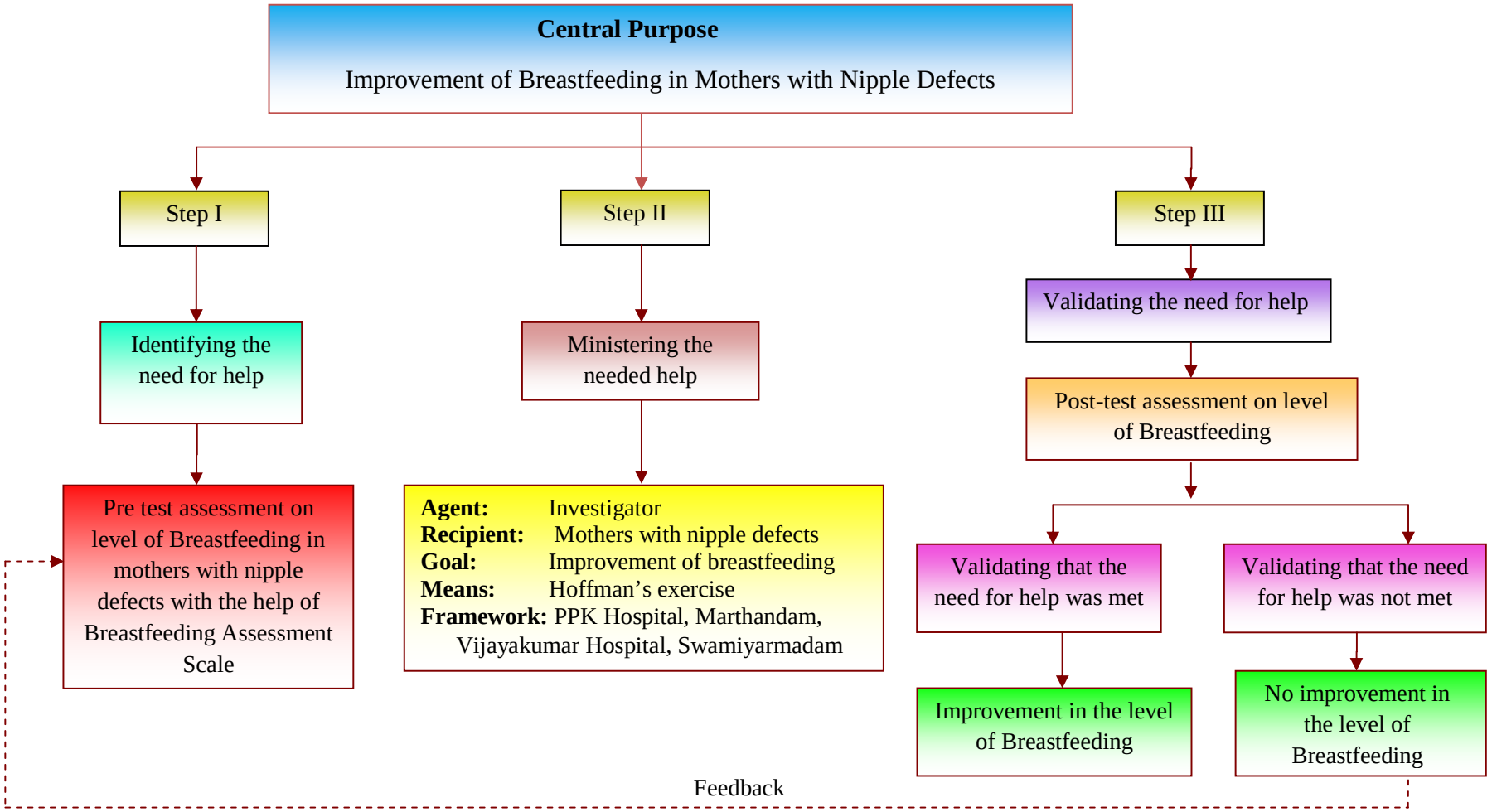
Means: Hoffman's exercise

Framework: PPK Hospital, Marthandam.

Vijayakumar Hospital, Swamiyarmadam.

Step-III: Validating that the need for help was met

It is accomplished by means of pre-test & post-test assessment on level of breastfeeding in postnatal mothers with nipple defects after rendering intervention.



CONCEPTUAL FRAMEWORK BASED ON WIEDENBACH'S HELPING ART OF CLINICAL NURSING THEORY (1964)

Figure 1-1

CHAPTER II

REVIEW OF LITERATURE

This chapter is designed to include the review of literature. The review of literature entails the systematic identification, reflection, criteria analysis and reporting of existing information in relation to the problem.

The review of literature presented in this chapter is organized systematically under the following headings.

a) **Studies related to importance of breastfeeding**
b) **Studies related to breast complications and their management during puerperium**
c) **Studies related to prevalence of flat and inverted nipples**
d) **Studies related to interventions for flat and inverted nipples**
e) **Studies related to effectiveness of Hoffman's exercise on flat and inverted nipples**

Studies related to importance of breastfeeding:

Joanne K et al (2012) conducted a case control study on breastfeeding and the risk of breast cancer in BRCA1 and BRCA2 mutation carriers. A total number of 1,665 women with breast cancer were selected as samples and compared with unaffected controls. Information about reproductive history and years of breastfeeding was obtained using questionnaire method. The study reveals that breastfeeding for at least one year was associated with 32% decrease in risk of breast cancer among BRCA1 mutation samples.

Natland T et al (2012) conducted a cross sectional population based study in Norway on lifetime duration of lactation and cardiovascular risk factors of mothers later in life. The samples were 21,368 parous women aged 20 to 85 years. Among women aged 50 years or younger, lifetime duration of lactation was significantly and inversely associated with

body mass index, waist circumference, systolic and diastolic blood pressure, and serum levels of triglycerides, total cholesterol and low density lipoprotein cholesterol. Among women older than 50 years there were no clear associations.

Kramer M S & Kakuma R (2011) conducted a meta-analysis on the effect of exclusive breastfeeding for six months versus exclusive breastfeeding for three months on child health, growth and development and maternal health. They had reviewed 23 internally controlled studies and observational studies and found that infants who are exclusively breastfed for six months experience less morbidity from gastrointestinal infection than those who are partially breastfed as of three months.

Steube A M et al (2011) conducted a observational cohort study in United States, and investigated the relationship between lactation and hypertension. Among 55,636 mothers investigated, 8,861 cases were found to develop hypertension in future. The study revealed that women who never breastfed were more likely to develop hypertension than women who exclusively breastfed their first child for ≥ 6 months. The authors also found similar results for women who had never breastfed compared with those who had breastfed each child for an average of ≥12 months.

World Health Organization (2009) stated that a suboptimal breastfeeding practice is responsible for 1.4 million deaths of children under the age of 5 years in low income countries worldwide. For these children breastfeeding support tops the table of life saving interventions. Thirteen percent of under 5 deaths could be saved through exclusive and continued breastfeeding until one year of age. One fifth of the neonatal death can be prevented by early initiation of breastfeeding.

United Nations International Children's Emergency Fund (2009) reported that breastfeeding saves 6 million lives each year by preventing diarrhea and acute respiratory infections. A breastfed child is 14 times less likely to die from diarrhea, 4 times less likely to die from respiratory disorders and 25 times less likely to develop other infections compared to non breastfed infants.

Academy of Breastfeeding Medicine (2009) analyzed various studies and reported that breastfeeding develops the baby's immune system and the presence of maternal

antibodies protect against infection. Breastfeeding reduces the risk of common disorders of early childhood such as ear infections, asthma, skin disorders, digestive problems and respiratory infections. A history of breastfeeding has been associated with reduced risk of type 2 diabetes mellitus, breast and ovarian cancer to mothers.

Vazirijinad R (2009) conducted a prospective cohort study to assess the effect of maternal breast variation on neonatal weight gain in the first seven days of life. Hundred babies born for mothers with breast variations were selected conveniently and compared against babies born for mothers with normal breast. The findings show that breast variation among primi mothers act as an important barrier to weight gain among breastfed neonates during early weeks of life.

Baker B et al (2008) conducted a study to determine the effectiveness of breastfeeding in reducing postpartum weight retention. Thirty postnatal mothers who were breastfeeding were randomly selected and interviewed at 6 months and 18 months postpartum. The results of the study showed that breastfeeding was associated with post partum weight reduction in all categories of pre pregnancy body mass index.

Beaudry M et al (2005) conducted a retrospective cohort study to assess the effect of the method of feeding on gastrointestinal illnesses among infants during the first six months of life. The samples for the study were 776 infants born in New Brunswick hospital, Canada, selected by convenient sampling method. The study evidenced that the crude incidence density ratio of gastrointestinal infections on breastfeeding babies is lower.

Studies related to breast complications and their management during puerperium

Strong G D (2011) conducted a descriptive study on management and support for breastfeeding pain in United States of America. The results identified that the rate of breast feeding was 56.4%, and among them 23% had pain on breastfeeding during the first year. The major reasons for pain were mastitis (67.5%), candida (32.4%), engorgement (18.0%), nipple tenderness (8.1%), and clogged milk ducts (4.5%). The study concluded that inadequate breast feeding support and management were evident

and non-evidence based recommendations were routinely practiced. It also suggested that primary care providers should adopt evidence based practices for breast feeding and breast feeding pain which support women in successfully reaching their breast feeding goals.

Mangesi L & Dowswell T (2010) conducted an experimental study on the effectiveness of different treatments for breast engorgement in South Africa. The interventions were acupuncture, cabbage leaves, cold gel packs, pharmacological treatments and ultrasound. The result showed that women had improvements in pain and other symptoms irrespective of whether they received active treatment or not. The study also showed that women receiving acupuncture had greater improvements and cold pack showed no difference.

Chiu J Y (2010) conducted a randomized controlled trial at level 3 medical teaching hospitals in China to determine the effects of two breast care methods among 54 postpartum women with breast engorgement. The study group received scrapping (Gua-Sha) therapy and the controlled group received traditional breast care (massage and heating). The result showed a statistical difference between the two groups at 5 and 30 minutes after intervention ($p<.001$) in terms of body temperature, breast engorgement, pain levels and discomfort. The study concluded that scrapping therapy was an effective technique in the management of breast engorgement. The study suggested that nurses can handle breast engorgement problems more effectively by using it in primary care and thus helping the patient both physically and psychologically.

Shetty (2009) conducted a study to evaluate the effectiveness of planned teaching program on breastfeeding problems and its management among primi gravid postnatal mothers. Thirty postnatal mothers from Mangalore hospital were selected as samples by non probability sampling method. The data was collected by means of knowledge questionnaire and the practice of breastfeeding was assessed by observation checklist. The study concluded that health education on breastfeeding problems and their management is the key to prevent common breastfeeding problems.

Arora et al (2008) conducted a quasi experimental study on the effectiveness of cabbage leaves versus hot and cold compression on breast engorgement. The setting was All India Institute of Medical Science, New Delhi. The sample size was 60 mothers of which 30 in the study group and 30 in the control group. The control group received alternate hot and cold compresses and the study group received cold cabbage leaf treatment for relieving breast engorgement. The result of the study showed that both the treatments, were effective in decreasing breast engorgement and pain in postnatal mothers, whereas hot and cold compresses were found to be more effective than cold cabbage leaves in relieving pain due to breast engorgement in postnatal mothers.

Nokhoodchi (2007) conducted a randomized double blinded study in Iran to evaluate the effectiveness of peppermint gel, lanolin oil and placebo on prevention of nipple crack associated with breastfeeding. The samples were 210 primi mothers and they were divided into three groups randomly. Each group was given one of the three interventions for 14 days. The study showed that nipple crack was less in mothers who received peppermint gel comparing to mothers who receive lanolin oil or placebo. This study concluded that prophylactic peppermint gel in breastfeeding lactating women is associated with small number of nipple cracks.

Xiaoqin G (2007) conducted an experimental study in Japan to evaluate the effectiveness of breast massage on the breast skin surface temperature and breast engorgement. The sample size was 35. The breast engorgement was measured using visual analogue scale rating from 0-10. The breast skin surface temperature measurement was assessed by infrared thermometer after 1 minutes, 3 minutes & 5 minutes after breast massage. The study concluded that breast massage is good for blood circulation and is considered to be an effective way to ease the discomfort of breast engorgement.

Colin & Scott (2004) conducted a cohort study in Western Australia on the reasons for stopping of breastfeeding. The objective of the study was to describe the problems experienced by mothers when breastfeeding and the impact that these problems have on breastfeeding duration. The samples were 556 postnatal mothers who were interviewed about their infant feeding practices. The result showed that twelve percent of the mothers left hospital without having attempted to breastfeed. Eighty three percent of

breastfeeding women stated that they had experienced one or more problems related to breastfeeding.

Riordan J M & Nichols F H (2004) conducted a descriptive prospective study on the occurrence of mastitis among lactating mothers. The samples were the mothers who attended breastfeeding conferences. Survey method was used for data collection. The study reveals that 33% of breastfeeding mothers were affected with lactational mastitis. The causes of mastitis were found to be plugged duct, increased level of stress, change in the number of feedings, engorgement/stasis, an infection in the family, breast trauma and poor diet.

Lavergne N A (2003) conducted a prospective, randomized research to evaluate the effectiveness of water versus tea bag compress in the treatment of sore nipple during breastfeeding. Sixty five primi mothers with sore nipple who are breast feeding after vaginal delivery at 37 or more week of gestation, who are 36 hours or less postpartum and had combined mother-infant care were selected as samples. Participants were assigned randomly to one of the three treatment groups (tea bag compress, water compress, or no compress). Participants applied the treatment four times a day, from day 1 to 15 postpartum. The result showed that tea bag and water compress were more effective than no treatment, with no statistically different between two type of compress.

Studies related to incidence of flat and inverted nipples:

Dewey et al (2011) conducted a study on risk factors for suboptimal infant breastfeeding behavior (SIBB), delayed onset of lactation and excess neonatal weight loss was conducted in California. The sample size was 280 breastfeeding mothers. The infant breastfeeding behavior was evaluated using the Infant Breastfeeding Assessment Tool. Suboptimal infant breastfeeding behavior was significantly associated with primi parity, caesarean section, flat or inverted nipples, infant status at birth, use of non-breast milk fluids in the first 48 hours, pacifier use, stage II labor > 1 hour, maternal body mass index > 27 kg/m^2 and birth weight <3600 gm. Delayed onset of lactation occurred in 22% of women and was associated with primi parity, caesarean section, maternal body mass index > 27 kg/m^2, flat or inverted nipples.

Raju et al (2011) conducted a survey about the breastfeeding problems during the first three postnatal days among late preterm and term mother newborn dyad. The sample size was 380 and the study was conducted in a tertiary care hospital in New Delhi. The samples were surveyed for perception of and documented breastfeeding problems using open ended questionnaire and checklist respectively. They found that the documented breastfeeding problems were poor positioning and attachment (99.5%), engorgement (20%), flat or inverted nipple (11.3%), sore nipple (6.6%) and cracked nipple (3.2%).

Sahin et al (2011) conducted a descriptive study to determine the risk factors affecting breastfeeding in Kayseri province. Five hundred mothers who had children aged 24 to 60 months were the samples. The result of the study showed that the main problems of breastfeeding are cracked nipples (46.0%), inadequate lactation (34.2%), excessive lactation (29.8%), flat or inverted nipples (11.6%), mastitis (9.2%), extreme fullness of the breast (9.0%) and plugged milk ducts (8.2%). The median exclusive breastfeeding duration and total lactation time of the mothers who had breastfeeding problems were significantly lower than the others.

Deepak et al (2008) conducted a prospective observational study on barriers of exclusive breastfeeding among 350 postnatal mothers using a semi structured interview. The result of the study was revealed at the end of 1st, 2nd and 6th postpartum week. The proportion of exclusive breastfeeding decreased to 95%, 93.3% and 75.8% respectively. The major problems faced by the mothers in giving breast milk are of perception of not having adequate milk in 16.9%, 7.4% of the mothers had cracked or sore nipples, engorgement of breast and 11.4% mothers had difficulty in giving exclusive breastfeeding because of flat and inverted nipples.

Ganguli G et al (2003) conducted a descriptive study on prevention and management of postnatal breast complications among 600 postnatal mothers in Allahabad. The study reveals that 20% of the mothers were having breast complications of which breast engorgement (43.33%) is more common followed by cracked nipples (17.8%), inverted nipples (10%), sore nipples (8.33%), failing lactation (7.5%) and breast abscess (3.33%).

Studies related to interventions for flat and inverted nipples:

Rymen et al (2012) conducted a randomized control trial on improving breastfeeding outcomes using appropriate interventions for mothers with flat nipples. The mothers with flat nipples admitted in Christina Health Services in New York were the samples. They were demonstrated about hand express of breast milk, use of breast pump and nipple shield for feeding. At 5 weeks postpartum, all the babies were exclusively breastfeeding without any interventions.

Basu and Chakrabarthi (2011) conducted a study on the effectiveness of latex rubber bands on flat, inverted nipples in improving the latching. They tested 19 mothers with flat, inverted nipples. Latex rubber bands cut from condom rims were worn by the mother during feeding for 28 days. The result was that 63% of mothers achieve latching with good attachment within 3 days and 100% did by the end of a month as nipples no longer remained a problem.

Julie (2011) conducted a randomized control study on use of supple cups for improving breastfeeding in mothers with flat nipples. Twelve antenatal mothers were selected conveniently and were given supple cups with instruction manual and asked to use after 37^{th} week of pregnancy. Eighty three percent of women went on successful latch and breastfeed their babies immediately in the postnatal period.

Long Zaoh (2011) conducted a study to evaluate the effectiveness of nipple retractor on correcting inverted nipples. Fifty three samples were selected conveniently and an operation was done in which the nipples were retracted into a normal position and fixated with a nipple retractor. The follow up was done on the 1^{st} day, 7^{th} day, after 1 month, 3 months, 6 months and then yearly. The result was found to be 100% effective and was sustained in all cases throughout the follow-up period.

Pharuhas et al (2010) conducted a randomized control trial in Thailand on outcome of non-protractile nipple correction with breast cups in pregnant women. Ninety singleton pregnant women of gestational age 16 – 20 weeks having unilateral and bilateral short

nipple who attended the antenatal clinic were the samples. They were advised to use breast cups for 8 hours per day. Level of breastfeeding was assessed using LATCH scale after three months postpartum. There was a significant rise in exclusive breastfeeding rate among women who used breast cups than that of the control group.

Powers Tapia (2004) conducted a retrospective study in USA regarding the use of nipple shield. Two hundred and two breastfeeding women assessed the perceptions regarding use of silicone nipple shield. Women used the shield for flat nipples(62%), infant's disorganized suck(43%), sore nipples(23%), engorgement(15%), prematurity(12%), short frenulum(1%) and other reasons(1%). This study suggests that nipple shield was useful for mothers with different types of feeding problems.

Teng et al (2003) conducted a study to evaluate the effectiveness of continuous distraction of the inverted nipples using an adjustable elastic instrument made of steel wire, spring and plastic syringe. Fourteen patients were treated with this technique. The mean follow up period was 7.3 months. Follow up examinations revealed no evidence of recurrence of inversion.

Hanna et al (2003) conducted a longitudinal descriptive study in USA to explore the breastfeeding outcome among mothers having nipple abnormalities and using nipple shield. Eighty one postpartum mothers were selected by convenient sampling using survey method. The findings of the study revealed that 72% of the mothers were satisfied with the use of nipple shield and found it to be helpful in improving breastfeeding.

Studies related to effectiveness of Hoffman's exercise on flat and inverted nipple

Sujeewa (2006) conducted a prospective descriptive study in Srilanka to evaluate the effectiveness of Hoffman's exercise on flat or inverted nipples. The 956 mothers who attended the antenatal clinic were screened. Among them 80 mothers who were identified as having flat or inverted nipples were selected as samples by convenient sampling method. Hoffman's exercise was taught to the mothers. Only 52 mothers came for regular check up and completed the study. The mothers were followed up until 4 months

after delivery. During the post test 44(84.6%) of flat, inverted nipples were corrected and established successful breastfeeding postnatally.

Alexander et.al (1992) conducted a randomized control trial in the United States to evaluate the effectiveness of breast shell versus Hoffman's exercise on correcting flat and inverted nipple. Ninty six nulliparous mothers between 25 and 35 weeks of gestation were selected as samples by convenient sampling method. The post test was done after 6 weeks postnatally .There was a significant improvement in nipple anatomy for mothers who used Hoffman's exercise (58%) than those used breast shells (52%).

CHAPTER – III

RESEARCH METHODOLOGY

This phase of study deals with research approach, research design, variables, setting, population, samples, sample size, sampling technique, criteria for sample selection, description of the tool, content validity, reliability of the tool, pilot study, data collection procedure, plan for data analysis and protection of human rights.

Research approach

Quantitative research approach has been used in this study.

Research design

The research design for the study is Pre experimental one group pre test post test design.

The diagrammatic representation of this design is as follows:

Group	Pre test	Intervention	Post test
Experimental	O1	X	O2

O1 - Level of breastfeeding in the pre test

X - Intervention with Hoffman's exercise (5 times per day for 15 days)

O2 - Level of breastfeeding in the post test.

Variables

Independent Variable **:** Hoffman's exercise

Dependent Variable **:** Level of breastfeeding

Setting

The setting of the study was PPK Hospital which is 300 bedded, located in Marthandam, Kanyakumari district. PPK Hospital is a multispecialty hospital located 35kms away from the St. Xavier's Catholic College of Nursing, Chunkankadai. It has all facilities like Casuality, Labor ward, Operation Theatre, Antenatal ward, Postnatal ward, Post-Operative ward and other specialities. PPK hospital records more than 200 deliveries every month. This hospital is well known for its maternal health care. The hospital was selected to get adequate number of samples.

Another setting of the study was Vijayakumar Hospital, a 100 bedded hospital in Swamiyarmadam, Kanyakumari district. This hospital is located 30 kms away from St. Xavier's Catholic College of Nursing, Chunkankadai. This hospital has a well-equipped Labor room, Operation theatre, Postnatal ward, Post-Operative ward and a specialized pediatric care unit. This hospital records about 100 deliveries per month. Since this hospital is situated near to PPK Hospital, it was selected for conducting the study.

Population

Target population: The study comprised of all postnatal mothers having nipple defects.

Accessible population: Postnatal mothers with nipple defects admitted in PPK Hospital and Vijayakumar Hospital.

Sample

All postnatal mothers who fulfilled the inclusion criteria and were admitted in the postnatal wards of PPK Hospital and Vijayakumar Hospital.

Sample size

The sample size was 30 postnatal mothers with nipple defects.

Sampling technique

The samples were selected by purposive sampling technique.

Criteria for sample selection

a) **Inclusion criteria**
   - Postnatal mothers who had nipple defects such as flat and inverted nipples.
   - Primi para mothers.

b) **Exclusion criteria**
   - Mothers who had cracked nipples.
   - Mothers who had postpartum complications such as postpartum blues and postpartum depression
   - Mothers who were not breastfeeding at the time of data collection.

Description of the tool

It consists of two parts **(Annexure IX)**

Part – I

This deals with the demographic variables of the mothers. It includes items such as age of the mother, type of delivery, and weeks of gestation at the time of delivery, education of the mother and antenatal preparation of nipples.

Part – II

It consists of the Via Christi Breastfeeding Assessment scale to assess the level of breastfeeding.

Scoring procedure for level of breastfeeding

Level of breastfeeding	Scores
Inadequate	0-2
Moderately adequate	3-6
Adequate	7-10

Content validity

The content was validated by 3 experts in the field of Obstetrics and Gynecological Nursing and 2 medical experts in the field of Obstetrics and Gynecology **(Annexure IV)**

Reliability of the tool

The reliability of the tool was checked by inter-rater method and the score was r = 0.82 which shows that the tool is reliable.

Pilot Study

The pilot study was conducted in the postnatal ward of the Caroline John Hospital, Nagercoil. The investigator obtained permission from the Principal of St. Xavier's Catholic College of Nursing and the Director of Caroline John Hospital, prior to the study. The study was conducted on three postnatal mothers. Pre test level of breastfeeding was assessed using Via Christi Breastfeeding Assessment scale. Hoffman's exercise was taught to the mothers and post test was done after 7 days. Analysis of the data was done using descriptive and inferential statistics. The tool and the instrument were found feasible and practicable. Since the researcher had difficulty in getting samples, the study was planned to conduct in two settings.

Description of the intervention

Hoffman's exercise is a simple, painless technique that pulls the flat and inverted nipples out. The mother has to place her both thumbs opposite to each other at the base of the nipple. The thumbs are pressed against the breast and pulled away from each other horizontally and vertically. The thumbs are then rotated around the base of the nipple. This technique has to be repeated 5 times per day and has to be continued for 15 days.

Data collection procedure

The data was collected within the given period of one month after obtaining a prior written permission from the administrator and the consultant of Obstetrics and Gynecology of PPK hospital and Vijayakumar hospital **(Annexure II)**. The postnatal mothers with nipple defects such as flat and inverted nipples were identified by physical examination. The purpose and nature of the study was explained to the mothers and pre test was conducted before giving intervention. Level of breastfeeding was assessed by Via Christi Breastfeeding Assessment Scale. Then Hoffman's exercise was demonstrated to the mothers. The mother has to place the thumb of both hands at the base of the nipple opposing each other. The thumbs are pressed against the breast and pulled away from each other horizontally and vertically. Then the thumbs are rotated around the base of the nipple. This exercise has to be done 5 times a day. The mother was advised to do the exercise regularly even after discharge from the hospital. A practice compliance checklist was given to the mother. The mother was asked to make a tick mark in the checklist after doing the Hoffman's exercise. The investigator visited the mother in her home once in three days and verified whether the exercise was done regularly. Post test level of breastfeeding was assessed after 15 days when the mother comes for the next checkup.

DATA COLLECTION PERIOD, NUMBER OF SAMPLES AND METHOD OF SAMPLE SELECTION

Table 3.1: Data collection period, number of samples and method of sample selection

Sample No	Date of Pre test	Date of Post test	Method of sampling
1	17.06.2013	01.07.2013	**Purposive Sampling Technique**
2	17.06.2013	01.07.2013	
3	17.06.2013	01.07.2013	
4	18.06.2013	02.07.2013	
5	19.06.2013	03.07.2013	
6	19.06.2013	03.07.2013	
7	20.06.2013	04.07.2013	
8	20.06.2013	04.07.2013	
9	21.06.2013	05.07.2013	
10	21.06.2013	05.07.2013	
11	22.06.2013	06.07.2013	
12	22.06.2013	06.07.2013	
13	24.06.2013	08.07.2013	
14	24.06.2013	08.07.2013	
15	25.06.2013	09.07.2013	
16	25.06.2013	09.07.2013	
17	26.06.2013	10.07.2013	
18	27.06.2013	11.07.2013	
19	27.06.2013	11.07.2013	
20	27.06.2013	11.07.2013	
21	28.06.2013	12.07.2013	
22	28.06.2013	12.07.2013	
23	29.06.2013	13.07.2013	
24	29.06.2013	13.07.2013	

25	01.07.2013	15.07.2013	**Purposive Sampling Technique**
26	01.07.2013	15.07.2013	
27	01.07.2013	15.07.2013	
28	02.07.2013	16.07.2013	
29	02.07.2013	16.07.2013	
30	03.07.2013	17.07.2013	

Plan for data analysis

Descriptive and inferential statistics were used to analyze the collected data**. (Annexure X)**

Descriptive Statistics

Frequency, percentage, mean and standard deviation were used for categorical data.

Inferential Statistics

Paired‘t’ test was used to find out the effectiveness of Hoffman’s exercise on level of breastfeeding. Chi-square test was used to associate the level of breastfeeding with the selected demographic variables.

Protection of Human Rights

The study was conducted after the approval of the Dissertation committee of St. Xavier’s Catholic College of Nursing. Permission was obtained from the director of PPK hospital and Director of Vijayakumar hospital. Verbal consent was obtained from each subject before starting the data collection. Assurance was given to the study subjects regarding the confidentiality of the data collected.

CHAPTER – IV

DATA ANALYSIS AND INTERPRETATION

This chapter deals with the analysis and interpretation of the data collected from the mothers with nipple defects. This chapter also represents the findings of the study. The data collected from the samples were tabulated, analyzed and presented in the tables and interpreted under the following sections based on the hypothesis of the study. This chapter consists of four sections.

Section – A

Distribution of mothers according to their selected demographic variables.

Section – B

Distribution of mothers according to the level of breastfeeding in the pre and post test.

Section - C

Comparison of pre and post test level of breastfeeding among postnatal mothers with nipple defects.

Section – D

Association between the level of breastfeeding and their selected demographic variables in the post test.

SECTION – A

FREQUENCY AND PERCENTAGE DISTRIBUTION OF MOTHERS ACCORDING TO THEIR SELECTED DEMOGRAPHIC VARIABLES

Table 4.1: Distribution of mothers according to their selected demographic variables.

n = 30

S.No	Demographic variables	Frequency	Percentage
1.	**Age of the mother**		
	a) 18 – 22 years	6	20
	b) 23 – 26 years	13	43.33
	c) 27 – 30 years	7	23.33
	d) >30 years	4	13.34
2.	**Type of delivery**		
	a) Normal vaginal delivery	13	43.33
	b) Instrumental delivery	3	10
	c) Caesarean Section	14	46.67
3.	**Gestational weeks at delivery**		
	a) < 34 weeks	1	3.33
	b) 34 – 37 weeks	16	53.34
	c) >37 weeks	13	43.33

4.	**Education of mother** a) Secondary b) Graduate c) Post graduate	 7 16 7	 23.33 53.34 23.33
5.	**Antenatal preparation of nipples** a) Done b) Not done	4 26	13.34 86.66

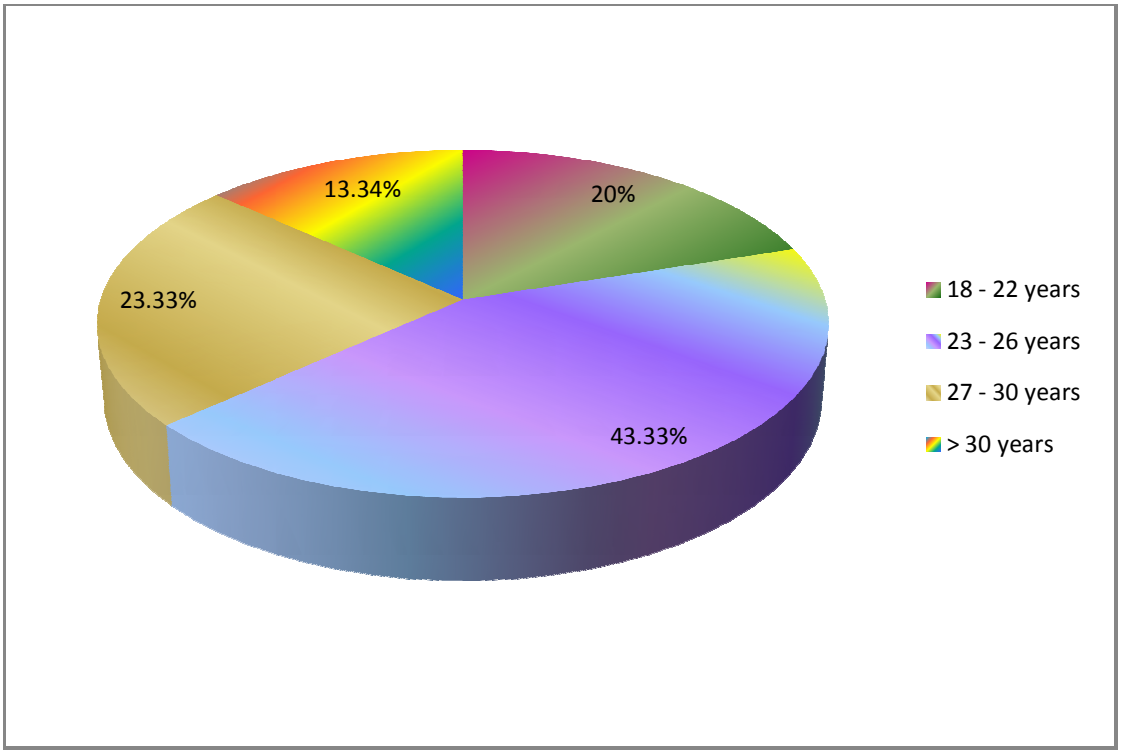
Table 4.1. depicts the distribution of mothers according to the age group. It shows that 6 (20%) of them belonged to the age group between 18 and 22, 13 (43.33%) of them belonged to 23 to 26 years of age, 7 (23.33%) are between the age group of 27 and 30 and 4 (13.34%) of them belonged to age above 30 years.

Dissipation of mothers according to type of delivery shows that 13 (43.33%) underwent normal vaginal delivery, 3 (10%) of them underwent instrumental delivery and 14 (46.67%) underwent lower segmental caesarean section.

Scattering of mothers according to the gestational weeks at the time of delivery shows, one (3.33%) sample was below 34 weeks of pregnancy, 16 (53.34%) were between 34 to 37 weeks of pregnancy and 13 (43.33%) were above 37 weeks of pregnancy.

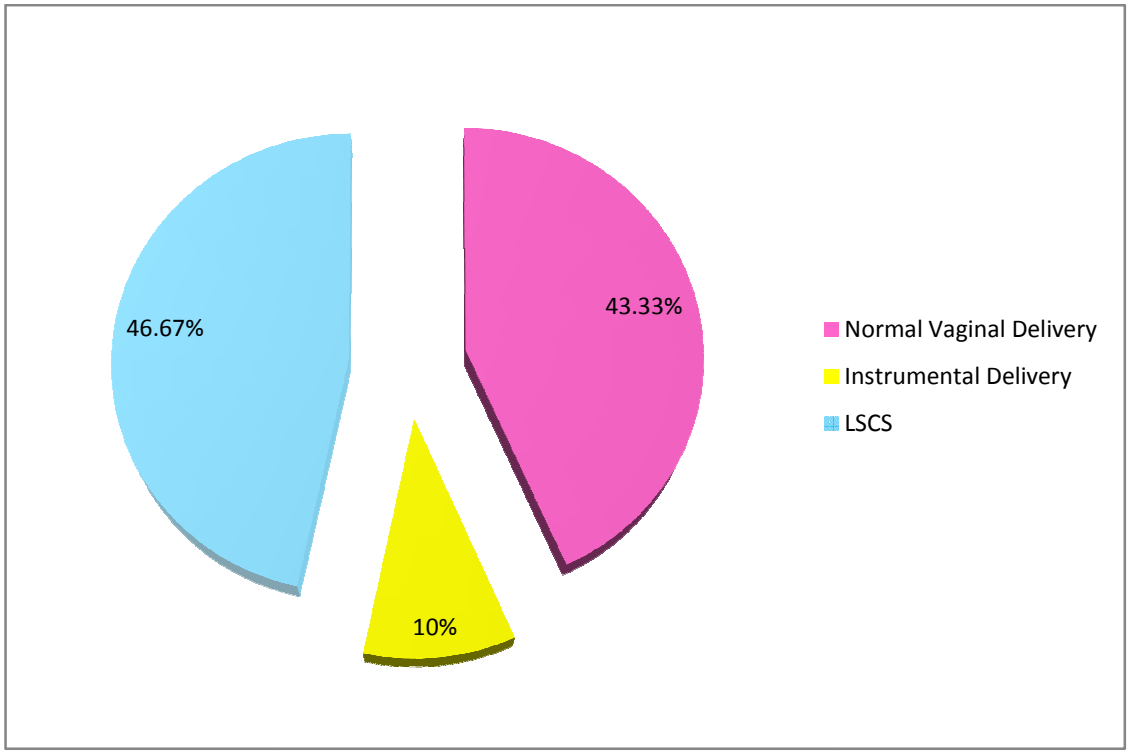
Allocation of mothers according to the education records, 7 (23.33%) had completed secondary education, 16 (53.34%) were graduates and 7 (23.33) samples were post graduates.

Dispersion of mothers according to the antenatal preparation of nipples depicts, 4 (13.34%) of the mothers had antenatal preparation of nipples and 26 (86.66%) of the mothers did not undergo antenatal preparation of nipples.



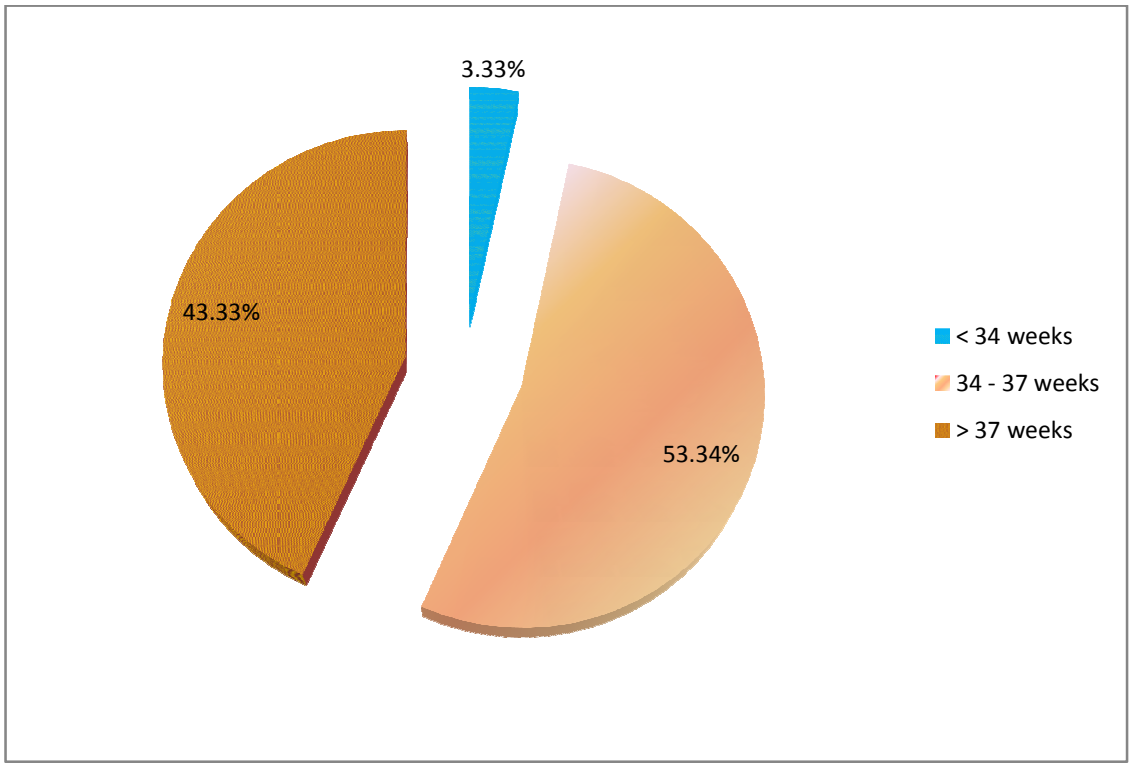
Distribution of mothers according to the Age

Fig-4.1



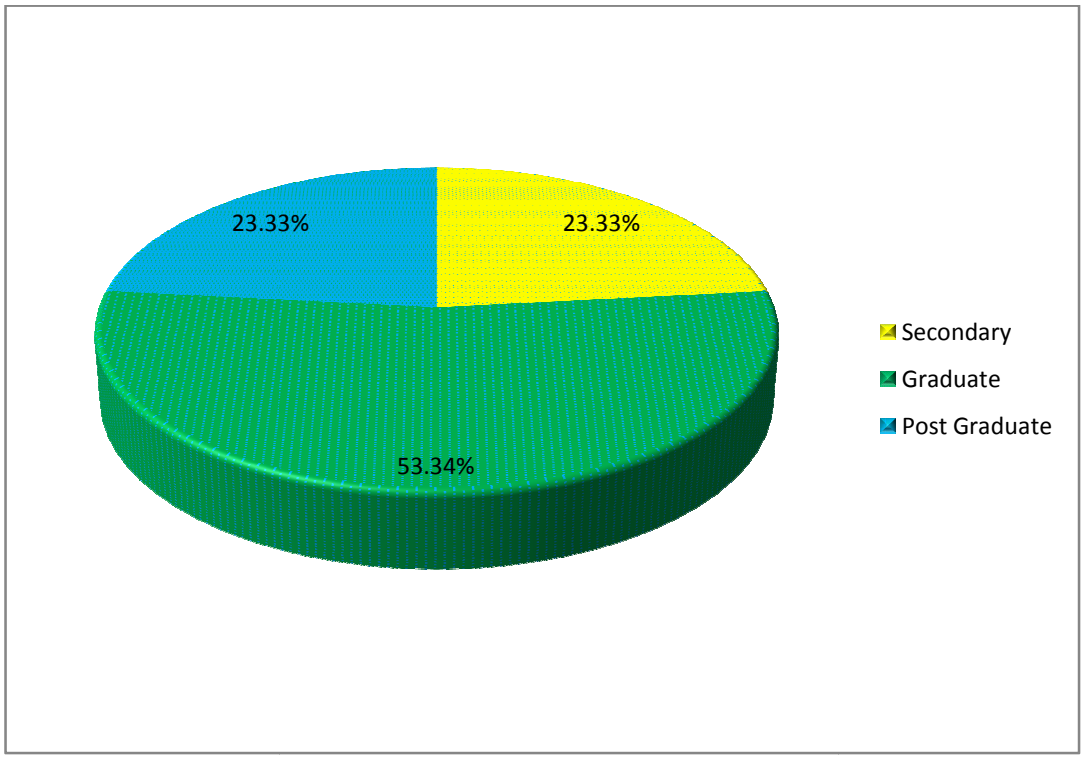
Dissipation of mothers according to the type of delivery

Fig-4.2



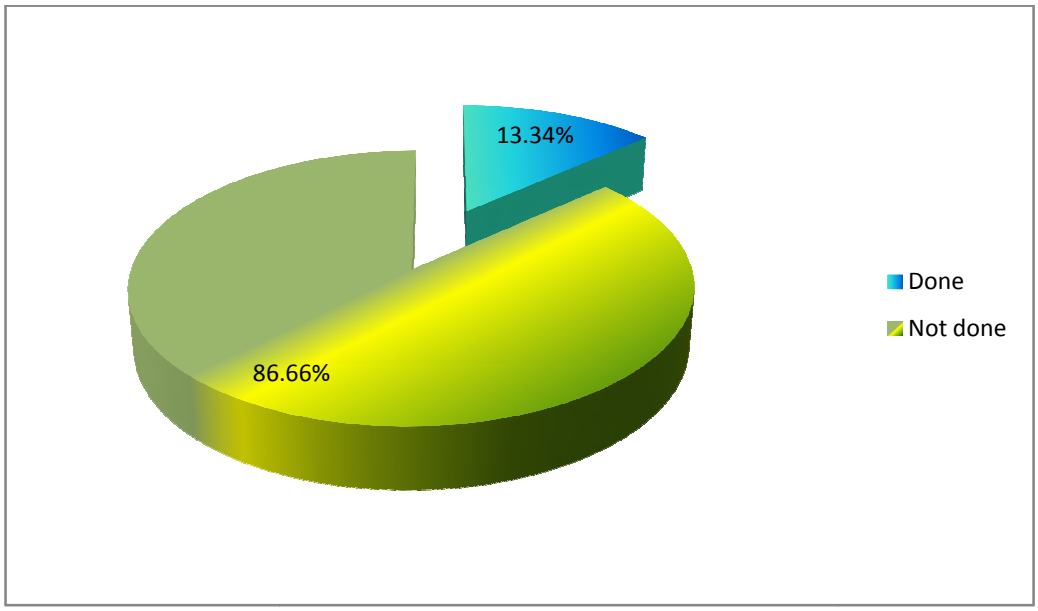
Scattering of mothers according to the gestational weeks at the time of delivery

Fig-4.3



Allocation of mothers according to the education

Fig-4.4



Dispersion of mothers according to antenatal preparation of nipples

Fig-4.5

SECTION – B

DISTRIBUTION OF MOTHERS ACCORDING TO THE LEVEL OF BREASTFEEDING IN THE PRE AND POST TEST

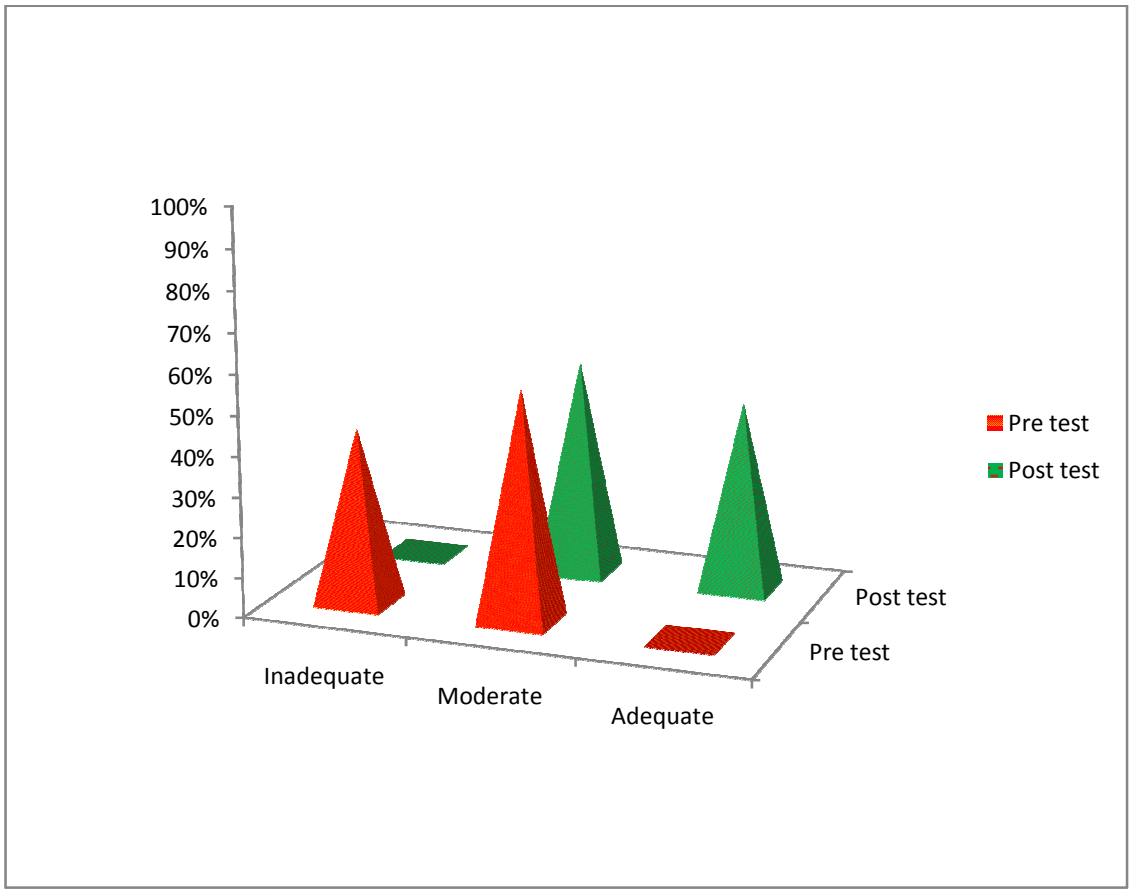
Table 4.2: Frequency and percentage distribution of mothers according to the pre and post test level of breastfeeding in study group.

n = 30

S.No	Level of breastfeeding	Pre test		Post test	
		F	%	F	%
1.	Inadequate	**13**	**43.33**	**0**	**0**
2.	Moderate	**17**	**56.67**	**16**	**53.34**
3.	Adequate	**0**	**0**	**14**	**46.66**

(Table 4.2) shows that in the pre test, 13(43.33%) had inadequate level of breastfeeding, 17(56.67%) had moderate level of breastfeeding and 0(0%) had adequate level of breastfeeding.

In the post test, 0(0%) had inadequate level of breastfeeding, 16(53.34%) had moderate level of breastfeeding and 14(46.66%) had adequate level of breastfeeding.



Distribution of mothers according to the pre test and post test level of breastfeeding

Fig 4.6

SECTION – C

COMPARISON OF MEAN, STANDARD DEVIATION, MEAN DIFFERENCE OF PRE TEST AND POST TEST LEVEL OF BREASTFEEDING AMONG POSTNATAL MOTHERS WITH NIPPLE DEFECTS

Table 4.3: Comparison of mean, standard deviation, mean difference of pre test and post test level of breastfeeding among the postnatal mothers with nipple defects

n = 30

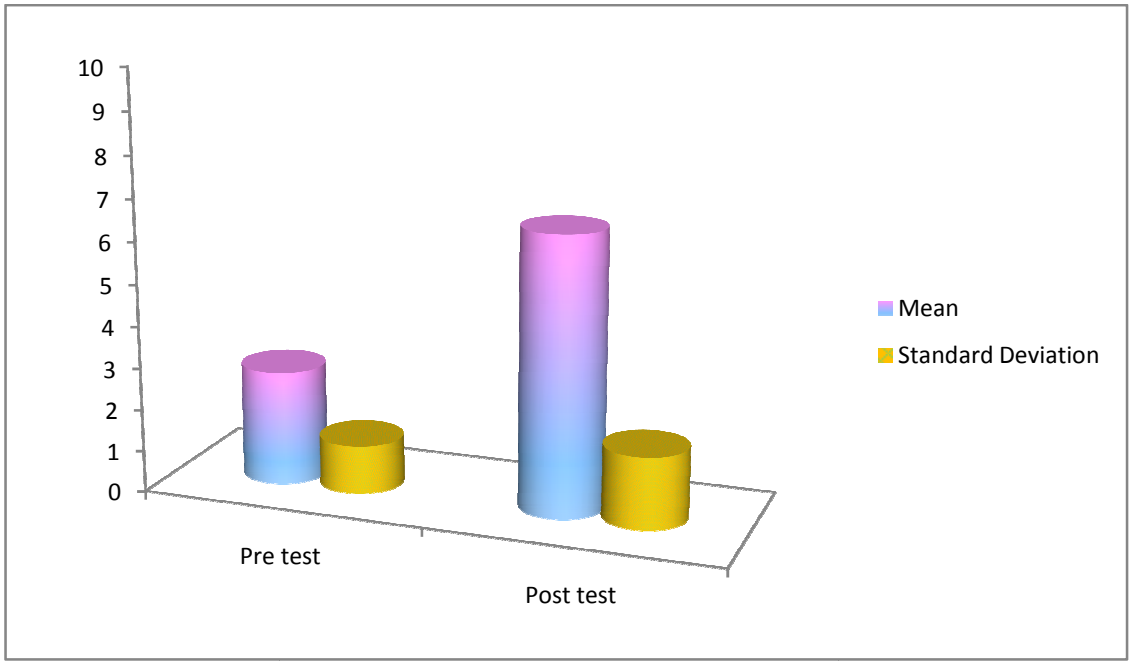
Level of breastfeeding	Mean	Standard Deviation	Mean Difference	't' value
Pre test	2.73	1.15	3.87	15.2
Post test	6.6	1.71		

(Table 4.3) reveals that the mean of pre test and mean of post test, Standard deviation and paired 't' value was calculated to determine the statistical significance of difference.

The obtained post test mean value 6.6 is higher than the pre test value 2.73. The mean difference between the pre test and the post test is 3.87 and the obtained't' value is 15.2. The mean value of post test is significantly higher than the mean value of pre test.

The obtained 't'value is significant at $P<0.05$. It is inferred that the level of breastfeeding was significantly improved in the post test after performing Hoffman's exercise.

The research hypothesis was retained.



Comparison of mean and standard deviation

Fig-4.7

SECTION – D

ASSOCIATION BETWEEN THE POST TEST LEVELS OF BREASTFEEDING WITH THEIR SELECTED DEMOGRAPHIC VARIABLES

Table 4.4: Association between the post test levels of breastfeeding with their selected demographic variables

n=30

S.No	Demographic variables	df	χ^2	Table value
1.	Age of the mother	6	3.86	12.59
2.	Type of delivery	4	2.168	9.49
3.	Gestational weeks at time of delivery	4	1.942	9.49
4.	Education of the mother	4	4.818	9.49
5.	Antenatal preparation of nipples	1	1.152	3.84

In the post test, the calculated Chi square value for the age of mother is 3.86, the degrees of freedom is 6 and the table value is 12.59. The table value is higher than the observed value 3.86. This indicates that there is no association between the level of breastfeeding and the age of the mother. The calculated Chi square value for the type of delivery is 2.168, degrees of freedom is 4 and the table value is 9.49. The table value is higher than the observed value 2.168. This indicates that there is no association between the level of breastfeeding and the type of delivery. The calculated Chi square value for the

gestational weeks at time of delivery is 1.942, the degrees of freedom is 4 and the table value is 9.49. The table value is higher than the observed value 1.942. This indicates that there is no association between the level of breastfeeding and the gestational weeks at time of delivery. The calculated Chi square value for education of the mother is 4.818, degrees of freedom is 4 and the table value is 9.49. The table value is higher than the obtained value 4.818. This indicates that there is no association between the level of breastfeeding and the education of the mother. The calculated Chi square value of antenatal preparation of nipples is 1.152, the degrees of freedom is 1 and the table value is 3.84. The table value is higher than the calculated value. It indicates that there is no association between the level of breastfeeding and antenatal preparation of nipples.

Hence the H2 is not accepted.

CHAPTER V

DISCUSSION

This study was done to determine the effectiveness of Hoffman's exercise on the level of breastfeeding among postnatal mothers with nipple defects in selected hospitals, Kanyakumari District. A pre test was conducted by measuring the level of breastfeeding using Via Christi Breastfeeding Assessment Scale. Post test was done after 15 days by using the same scale.

Demographic Profile of the Samples

Majority of samples in the demographic profile, 13 (43.33%) belonged to the age group between 22 and 26 years, 14 (46.67%) of them were delivered by lower segmental caesarean section, 16 (53.34%) of them were delivered between the gestational age of 34 to 37 weeks, 16 (53.34%) of them were graduates, 26 (86.86%) had not done antenatal nipple preparation.

Minority of samples in the demographic profile, 4 (13.34%) belongs to age group above 30 years, 3 (10%) of them delivered with instrumental assistance, 1 (3.33%) delivered at gestational age less than 34 weeks, 7 (23.33%) of them were completed secondary school education and 7 (23.33%) were post graduates, and 4 (13.34%) of them had done antenatal preparation of nipples.

The first objective of the study was to assess and compare the pre and post test level of breastfeeding among postnatal mothers with nipple defects

During pre test, among 30 samples, 13 (43.33%) had inadequate level of breastfeeding and 17 (56.67%) had moderate level of breastfeeding. In the post test, among 30 samples, 16 (53.34%) samples had moderate level of breastfeeding and 14 (46.66%) samples had adequate level of breastfeeding.

The researcher adopted Widenbach's Helping Art of Clinical Nursing Theory (1964) to conceptualize the study. According to this theory, the central purpose is the goal of the nurse. In this study the goal of the researcher is to improve the level of breastfeeding

among mothers with nipple defects. To attain this goal nursing action has to be carried out in three steps. The first step is the identification of the needs of the patients. The researcher identified the need of the mother by conducting a pre test. The investigator assessed the level of breastfeeding of the mothers having nipple defects with Via Christi Breastfeeding Assessment Scale. In the pre test 13 (43.33%) mothers had inadequate level of breastfeeding, 17 (56.67%) mothers had moderate level of breastfeeding and no one had adequate level of breastfeeding.

The second objective of the study was to evaluate the effectiveness of Hoffman's exercise on the level of breastfeeding among postnatal mothers with nipple defects.

In pre test, 13 (43.33%) had inadequate level of breastfeeding, 17 (56.67%) had moderate level of breastfeeding and no one had adequate level of breastfeeding. In the post test, no one had inadequate level of breastfeeding, 16 (53.34%) had moderate level of breastfeeding and 14 (46.66%) samples had adequate level of breastfeeding. The mean of pre test and post test, the standard deviation of pre test and post test and paired't' value were calculated to determine the statistical significance of difference. The obtained mean value of pre test is 2.3 and that of the post test is 6.6. The mean difference between the pre and post test is 3.87. The obtained 't'value is 15.2 and it is significant at the level of $p<0.05$. The mean value of post test is significantly higher than the mean value of the pre test which is significant. This showed that there was a significant improvement in the level of breastfeeding after performing Hoffman's exercise.

The second step in achieving the goal of nursing is ministering the needed help. The components required for ministering the needed help are the agent, recipient, goal, means and framework. The agent in this study was the investigator, the recipient was the postnatal mothers with nipple defects, the goal was to improve the level of breastfeeding, it can be achieved by means of the Hoffman's exercise and the framework for the study was PPK hospital and Vijayakumar hospital. The researcher taught Hoffman's exercise to the postnatal mothers with nipple defects. The next step is the validation of the need. It was done by assessing the post test level of breastfeeding after 15 days of intervention.

In the post test 14 (46.66%) mothers had adequate level of breastfeeding, 16 (53.34%) of the mothers had moderate level of breastfeeding and no one had inadequate level of breastfeeding. Hence the researcher validated that there was a significant improvement in the level of breastfeeding after performing the Hoffman's exercise. Thus the central purpose was met.

This finding was supported by the study conducted by Sujeewa A (2006) in Srilanka to determine the effectiveness of Hoffman's exercise on flat and inverted nipples. The study was a prospective descriptive study among 956 antenatal mothers who attended the antenatal clinics. In that 80 mothers were identified as having flat or inverted nipples. Hoffman's exercise was taught to those mothers. 52 mothers completed the study and the others were left out. Follow up was done till delivery. 44(84.61%) mothers who had flat or inverted nipples were corrected antenatally and they established successful lactation. Only 8 mothers with extreme inverted nipples were not corrected and were demonstrated by the failure in establishing lactation.

The third objective of the study was to find out the association between the post test levels of breastfeeding with the selected demographic variables.

In the post test, there is no significant association in the level of breastfeeding and the demographic variables such as age of the mother, type of delivery, gestational weeks at delivery, education of the mother and antenatal preparation of nipples.

CHAPTER VI

SUMMARY, CONCLUSION, IMPLICATIONS AND RECOMMENDATIONS

This chapter consists of four sections. In the first two sections, the summary and conclusion are presented. In the last two sections, the implications for nursing practice and recommendation for further research are presented.

Summary

Quantitative approach with pre experimental research design was used to determine the effectiveness of Hoffman's exercise on level of breastfeeding among postnatal mothers with nipple defects. The conceptual framework of the study was based on **Widenbach's Helping art of Clinical Nursing Theory (1964).** The tool used in this study consists of two sections. Section one was a structured questionnaire to collect the demographic profile of the samples, and section two was Via Christi Breastfeeding Assessment Scale to observe the level of breastfeeding. Purposive sampling technique was used to select the samples and data were collected from 30 postnatal mothers with nipple defects in PPK hospital, Marthandam and Vijayakumar hospital, Swamiyarmadam, Kanyakumari District, Tamilnadu. The data were collected and analyzed using descriptive and inferential statistics. Two hypotheses were framed in the study one stating that there will be significant difference in the pre and post test level of breastfeeding among postnatal mothers with nipple defects and the second hypothesis states that, there will be significant association between the post test levels of breastfeeding with that of the selected demographic variables. To test the hypothesis, paired 't' test and chi-square test were used.

The major findings are:

- The demographic profile shows that 13 (43.33%) of the samples belonged to the age group of 23-26 years and 4 (13.34%) of them belonged to the age above 30 years. As per the type of delivery 14 (46.67%) had underwent lower segmental caesarean section and 3 (10%) underwent instrumental delivery. 16 (53.34%) of

samples delivered between 34 and 37 weeks of gestation and 1 (3.33%) delivered before 34 weeks of gestation. 16 (53.34%) of the samples were graduates, 7 (23.33%) were completed secondary education and 7 (23.33%) were post graduates. Antenatal preparation of nipples was not done by 26 (86.66%) of samples and done by 4 (13.34%) of samples. 5 samples were dropped out during the course of study. 3 were on irregular practice of Hoffman's exercise and 2 were unable to follow up.

- During pre test 13 (43.33%) had inadequate level of breastfeeding, 17 (56.67%) had moderate level of breastfeeding and none had adequate level of breastfeeding. In the post test 14 (46.66%) had adequate level of breastfeeding, 16 (53.34%) had moderate level of breastfeeding and none had inadequate level of breastfeeding.
- In the pre test the calculated mean was 2.73 and the post test mean was 6.6 the calculated't' value was 15.2, so there was significant difference in the pre test and post test scores of level of breastfeeding.

Conclusion

Breastfeeding is the first essential care given by the mother to her baby. The nurse midwife plays an important role in establishing an effective breastfeeding in primi mothers. The postnatal mothers with nipple defects face problems with breastfeeding. They require some interventions to improve the level of breastfeeding. The finding of the study revealed that, there was no significant association between demographic variables and level of breastfeeding. The pre and post test't' value was 15.2 which was higher than the table value at ($p<0.05$) level which shows that Hoffman's exercise enhances the level of breastfeeding in the post test. So Hoffman's technique was an effective intervention in improving the level of breastfeeding among postnatal mothers with nipple defects.

Implications for nursing practice

Nursing Service

Hoffman's exercise is an effective procedure to improve the level of breastfeeding in postnatal mothers with flat and inverted nipples. It releases the adhesions in the fibrous band of the breast and made the nipple erect. It will reduce the risk of developing breast engorgement since the latch on will be effective that reduces the chance of milk stasis. Hoffman's technique is a safe, painless and simple procedure. As a midwife one can advice the postnatal mothers with nipple defects to perform this exercise. The instruction can be given in the antenatal period itself so that the mother will perform it immediately after the delivery.

Nursing Education

Student nurses can be trained to assess the condition of nipple prior to initiation of breastfeeding. They can be encouraged to perform various interventions to improve breastfeeding including Hoffman's exercise. The nursing students should be taught about the problems associated with nipple defects and the importance of breastfeeding. Nurse educators should orient the students towards various forms of interventions for nipple defects and improvement of breastfeeding.

Nursing Administration

The nurse administrator coordinates her activity along with the curative aspects of care among postnatal mothers by participating, practicing and supervising the implementation of Hoffman's exercise. Nursing administrator can organize in-service education programme regarding the effectiveness of Hoffman's exercise on level of breastfeeding for staff nurses. Hospitals and birthing centers should provide breast care policies that create awareness among the mothers for self care of breast and nipples.

Nursing research

Nursing research has to be done to find out the various innovative methods to improve the level of breastfeeding among mothers with nipple defects. The findings of the study would help to expand the scientific body of professional knowledge upon which

further research can be conducted. Large scale study can be conducted on the same intervention

Recommendations

- Similar study can be conducted as comparative between Primi and multi mothers in different settings.
- Similar study can be conducted as comparative study between the regular hospital routine.
- A study can be conducted with large sample size to generalize the results of the study.
- The study can be carried out for a longer period of time.

Limitations

- The duration of intervention was limited to fifteen days, so the complete improvement in the level of breastfeeding was not observed.
- Since very few studies had been done previously on the same topic, the researcher had difficulty in getting the review.
- Since examination of nipple is a sensitive issue, researcher faced difficulty in obtaining permission from various private hospitals to conduct the study.

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ANNEXURE I

LETTER SEEKIING PERMISSION TO CONDUCT THE STUDY

St. XAVIER'S CATHOLIC COLLEGE OF NURSING

Chunkankadai, Nagercoil,
Kanyakumari District,
Tamil Nadu - 629 003.

Tel : College : 04651 - 231740
Cell : 9840307884
Fax : 04651 - 230914
E-mail : xaviers_nursing@yahoo.com
reenaevancy@yahoo.com
Website : www.xaviersnsg.edu.in

Dr. A. REENA EVENCY, M.Sc. (N)., Ph.D.,
Principal

06.05.2013

To

The director,
P.P.K hospital,
Marthandam.

Respected Madam/ Sir,

Miss. Stephy S. Godfrey is a student of M. Sc., Nursing programme from the Clinical Speciality, Obstetrics and Gynecological Nursing in our college. She is conducting a study on **'A study to evaluate the effectiveness of Hoffman's exercise on breastfeeding among postnatal mothers with nipple defects in selected hospital, Kanyakumari district'.**

This is for the research project to be submitted to the Tamilnadu Dr. M.G.R Medical University in Partial fulfillment of university requirement for the award of M.Sc., Nursing Degree and will be beneficial in understanding and improving the health of the postnatal mothers and newborn during postnatal period.

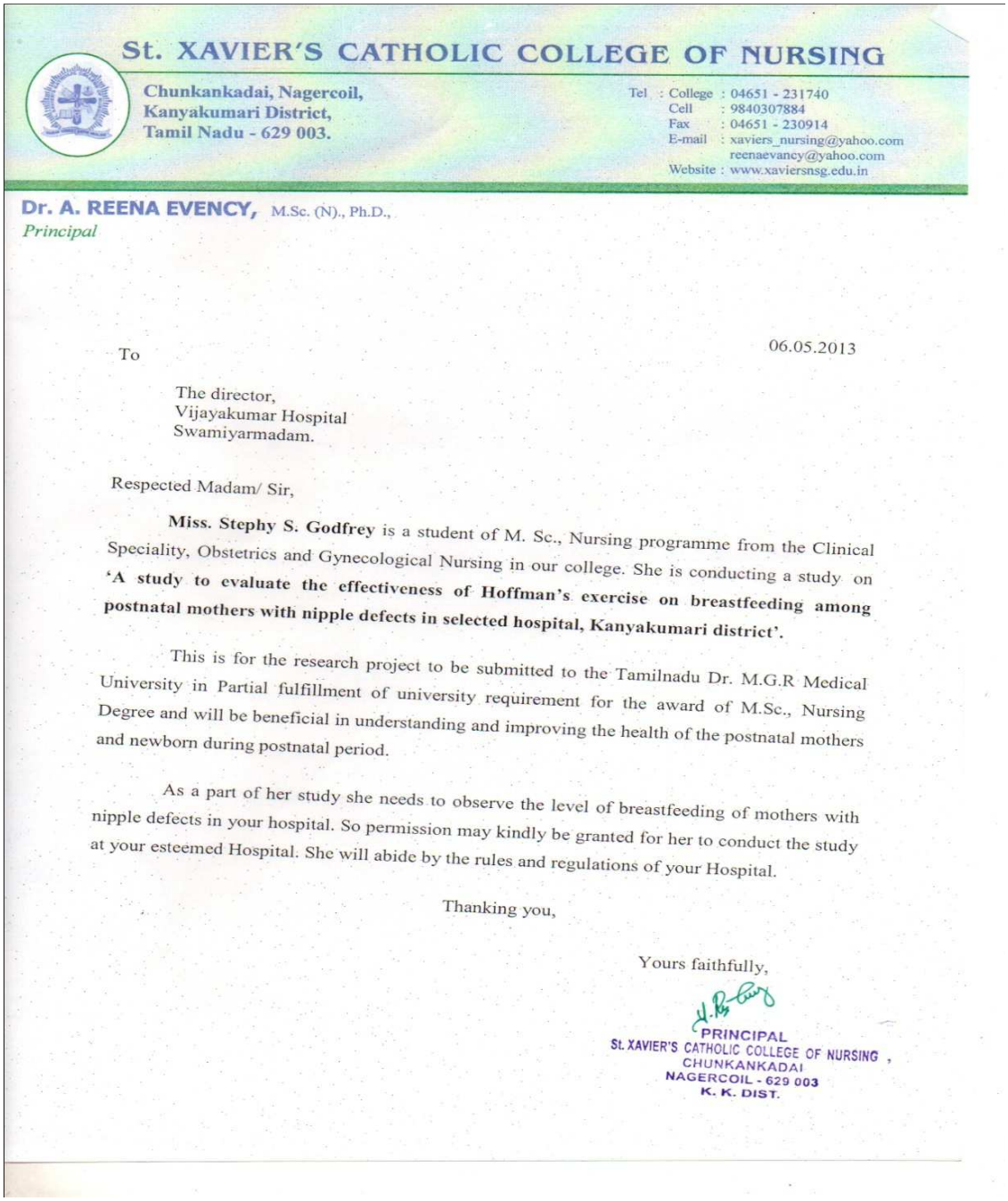
As a part of her study she needs to observe the level of breastfeeding of mothers with nipple defects in your hospital. So permission may kindly be granted for her to conduct the study at your esteemed Hospital. She will abide by the rules and regulations of your Hospital.

Thanking you,

Yours faithfully,

PRINCIPAL
ST. XAVIER'S CATHOLIC COLLEGE OF NURSING
CHUNKANKADAI
NAGERCOIL - 629 003
K. K. DIST.

LETTER SEEKIING PERMISSION TO CONDUCT THE STUDY



St. XAVIER'S CATHOLIC COLLEGE OF NURSING

Chunkankadai, Nagercoil,
Kanyakumari District,
Tamil Nadu - 629 003.

Tel : College : 04651 - 231740
Cell : 9840307884
Fax : 04651 - 230914
E-mail : xaviers_nursing@yahoo.com
reenaevancy@yahoo.com
Website : www.xaviersnsg.edu.in

Dr. A. REENA EVENCY, M.Sc. (N)., Ph.D.,
Principal

06.05.2013

To

The director,
Vijayakumar Hospital
Swamiyarmadam.

Respected Madam/ Sir,

Miss. Stephy S. Godfrey is a student of M. Sc., Nursing programme from the Clinical Speciality, Obstetrics and Gynecological Nursing in our college. She is conducting a study on **'A study to evaluate the effectiveness of Hoffman's exercise on breastfeeding among postnatal mothers with nipple defects in selected hospital, Kanyakumari district'.**

This is for the research project to be submitted to the Tamilnadu Dr. M.G.R Medical University in Partial fulfillment of university requirement for the award of M.Sc., Nursing Degree and will be beneficial in understanding and improving the health of the postnatal mothers and newborn during postnatal period.

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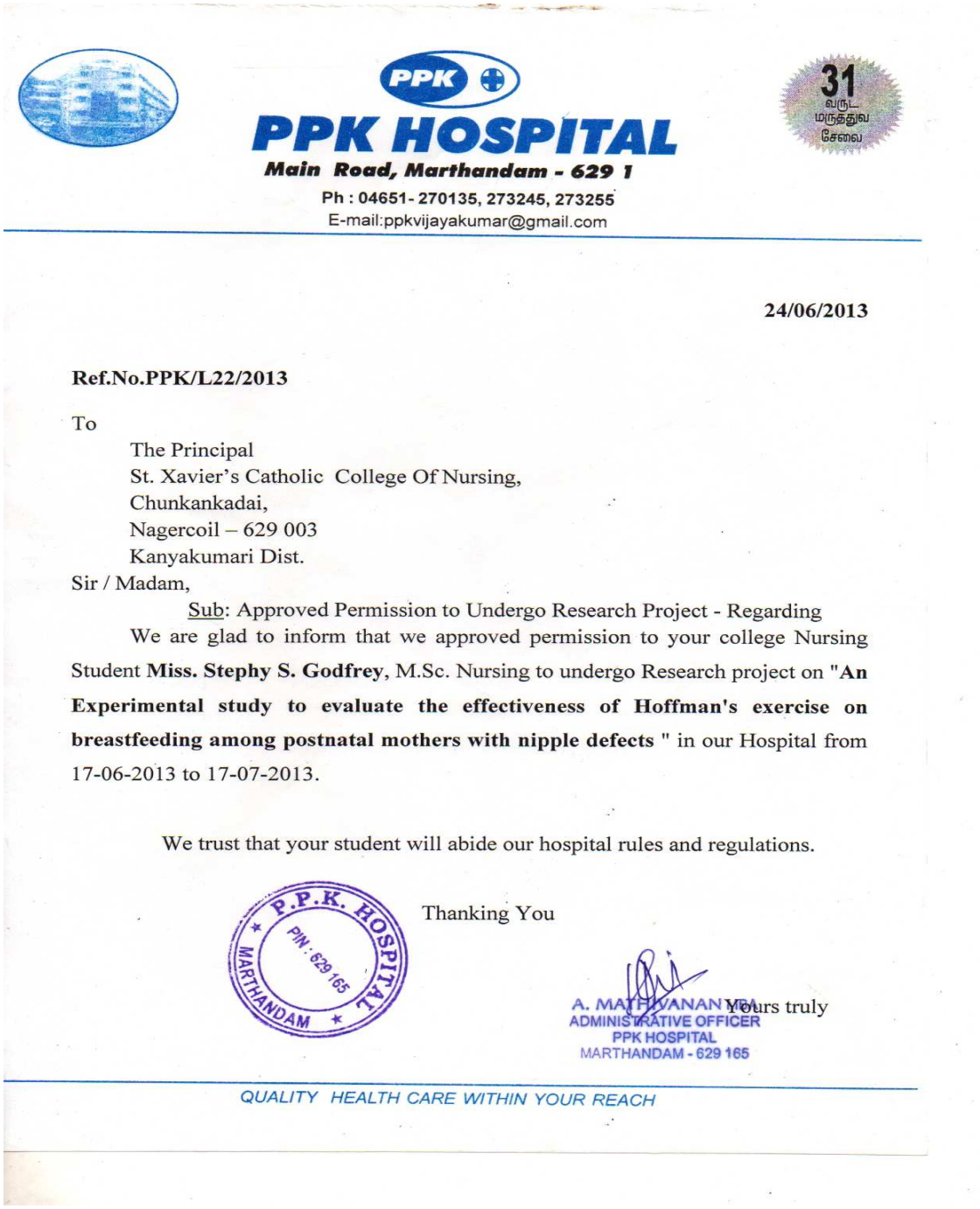
Thanking you,

Yours faithfully,

PRINCIPAL
St. XAVIER'S CATHOLIC COLLEGE OF NURSING ,
CHUNKANKADAI
NAGERCOIL - 629 003
K. K. DIST.

ANNEXURE II

LETTER GRANTING PERMISSION TO CONDUCT THE STUDY



PPK HOSPITAL
Main Road, Marthandam - 629 1
Ph : 04651- 270135, 273245, 273255
E-mail:ppkvijayakumar@gmail.com

31 வருட மருத்துவ சேவை

24/06/2013

Ref.No.PPK/L22/2013

To

The Principal
St. Xavier's Catholic College Of Nursing,
Chunkankadai,
Nagercoil – 629 003
Kanyakumari Dist.

Sir / Madam,

Sub: Approved Permission to Undergo Research Project - Regarding

We are glad to inform that we approved permission to your college Nursing Student **Miss. Stephy S. Godfrey**, M.Sc. Nursing to undergo Research project on "**An Experimental study to evaluate the effectiveness of Hoffman's exercise on breastfeeding among postnatal mothers with nipple defects** " in our Hospital from 17-06-2013 to 17-07-2013.

We trust that your student will abide our hospital rules and regulations.

P.P.K. HOSPITAL PIN : 629 165 MARTHANDAM

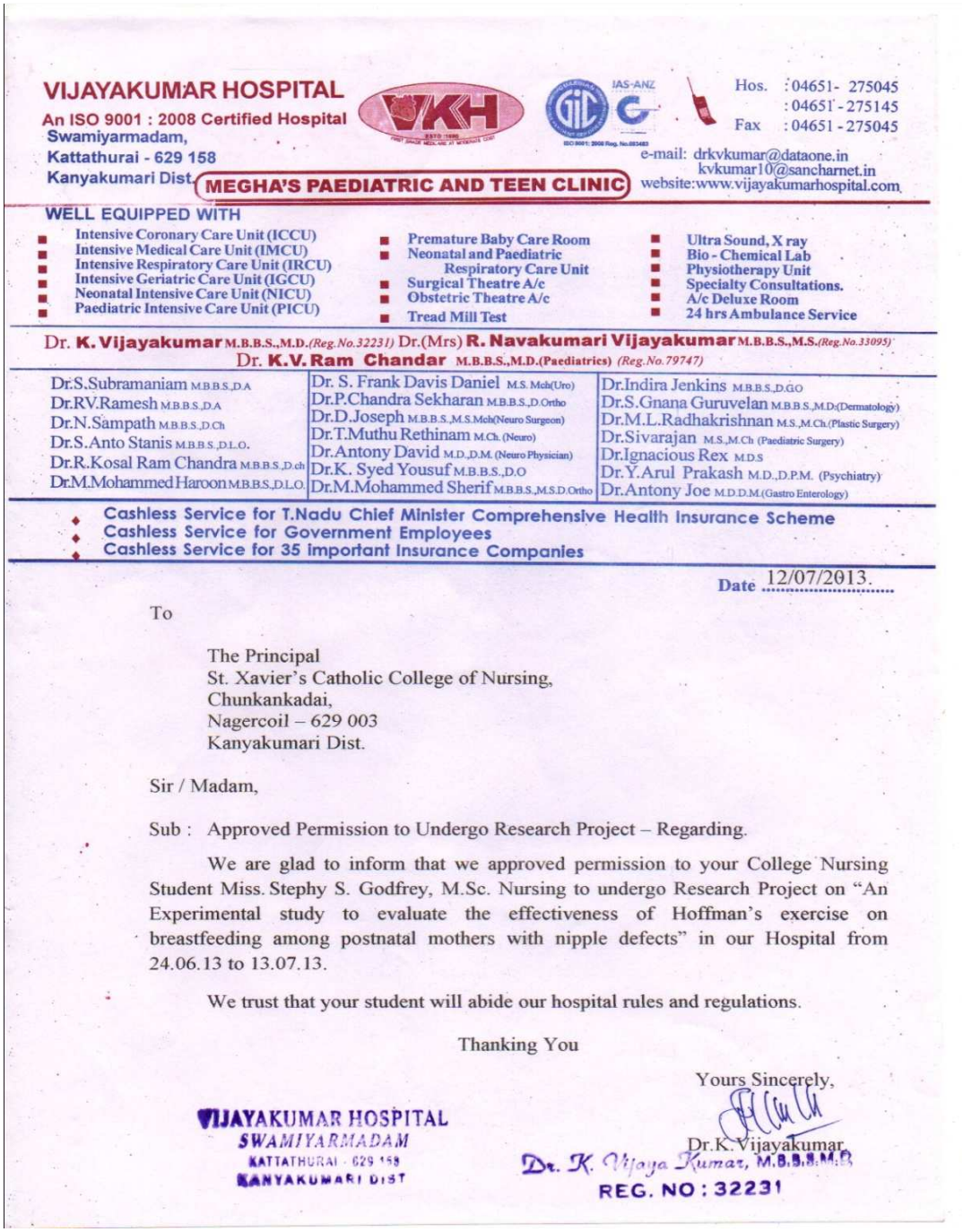
Thanking You

Yours truly

A. MATHIVANAN, MBA
ADMINISTRATIVE OFFICER
PPK HOSPITAL
MARTHANDAM - 629 165

QUALITY HEALTH CARE WITHIN YOUR REACH

LETTER GRANTING PERMISSION TO CONDUCT THE STUDY



VIJAYAKUMAR HOSPITAL
An ISO 9001 : 2008 Certified Hospital
Swamiyarmadam,
Kattathurai - 629 158
Kanyakumari Dist.

IAS-ANZ

Hos. :04651- 275045
:04651 - 275145
Fax :04651 - 275045
e-mail: drkvkumar@dataone.in
kvkumar10@sancharnet.in
website:www.vijayakumarhospital.com

MEGHA'S PAEDIATRIC AND TEEN CLINIC

WELL EQUIPPED WITH

- Intensive Coronary Care Unit (ICCU)
- Intensive Medical Care Unit (IMCU)
- Intensive Respiratory Care Unit (IRCU)
- Intensive Geriatric Care Unit (IGCU)
- Neonatal Intensive Care Unit (NICU)
- Paediatric Intensive Care Unit (PICU)
- Premature Baby Care Room
- Neonatal and Paediatric Respiratory Care Unit
- Surgical Theatre A/c
- Obstetric Theatre A/c
- Tread Mill Test
- Ultra Sound, X ray
- Bio - Chemical Lab
- Physiotherapy Unit
- Specialty Consultations.
- A/c Deluxe Room
- 24 hrs Ambulance Service

Dr. **K. Vijayakumar** M.B.B.S.,M.D.*(Reg.No.32231)* Dr.(Mrs) **R. Navakumari Vijayakumar** M.B.B.S.,M.S.*(Reg.No.33095)*
Dr. **K.V. Ram Chandar** M.B.B.S.,M.D.(Paediatrics) *(Reg.No.79747)*

Dr.S.Subramaniam M.B.B.S.,D.A	Dr. S. Frank Davis Daniel M.S. Meh(Uro)	Dr.Indira Jenkins M.B.B.S.,D.GO
Dr.RV.Ramesh M.B.B.S.,D.A	Dr.P.Chandra Sekharan M.B.B.S.,D.Ortho	Dr.S.Gnana Guruvelan M.B.B.S.,M.D.(Dermatology)
Dr.N.Sampath M.B.B.S.,D.Ch	Dr.D.Joseph M.B.B.S.,M.S.Meh(Neuro Surgeon)	Dr.M.L.Radhakrishnan M.S.,M.Ch.(Plastic Surgery)
Dr.S.Anto Stanis M.B.B.S.,D.L.O.	Dr.T.Muthu Rethinam M.Ch. (Neuro)	Dr.Sivarajan M.S.,M.Ch (Paediatric Surgery)
Dr.R.Kosal Ram Chandra M.B.B.S.,D.ch	Dr.Antony David M.D.,D.M. (Neuro Physician)	Dr.Ignacious Rex M.D.S
Dr.M.Mohammed Haroon M.B.B.S.,D.L.O.	Dr.K. Syed Yousuf M.B.B.S.,D.O	Dr.Y.Arul Prakash M.D.,D.P.M. (Psychiatry)
	Dr.M.Mohammed Sherif M.B.B.S.,M.S.D.Ortho	Dr.Antony Joe M.D.D.M.(Gastro Enterology)

- Cashless Service for T.Nadu Chief Minister Comprehensive Health Insurance Scheme
- Cashless Service for Government Employees
- Cashless Service for 35 important Insurance Companies

Date 12/07/2013.

To

The Principal
St. Xavier's Catholic College of Nursing,
Chunkankadai,
Nagercoil – 629 003
Kanyakumari Dist.

Sir / Madam,

Sub : Approved Permission to Undergo Research Project – Regarding.

We are glad to inform that we approved permission to your College Nursing Student Miss. Stephy S. Godfrey, M.Sc. Nursing to undergo Research Project on "An Experimental study to evaluate the effectiveness of Hoffman's exercise on breastfeeding among postnatal mothers with nipple defects" in our Hospital from 24.06.13 to 13.07.13.

We trust that your student will abide our hospital rules and regulations.

Thanking You

Yours Sincerely,

VIJAYAKUMAR HOSPITAL
SWAMIYARMADAM
KATTATHURAI - 629 158
KANYAKUMARI DIST

Dr.K. Vijayakumar

Dr. K. Vijaya Kumar, M.B.B.S.,M.D.
REG. NO : 32231

ANNEXURE III

LETTER SEEKING EXPERTS OPINION FOR THE VALIDITY OF THE TOOL

From,

Ms.Stephy S. Godfrey

M.Sc. Nursing II year,

St. Xavier's Catholic college Of Nursing,

Chunkankadai.

To,

Dr. F. Caroline Felicia Mary. M.D. DGO.

Caroline John Hospital,

Nagercoil.

Respected Madam,

Sub: Requisition to expert opinion and suggestion for the content validity.

I Stephy S. Godfrey, M.Sc. Nursing II year student of St. Xavier's Catholic College Of Nursing, Chunkankadai, have selected the following topic **'A pre experimental study to evaluate the effectiveness of Hoffman's exercise on breastfeeding among postnatal mothers with nipple defects in selected hospital, Kanyakumari district'** for my dissertation to be submitted to Tamilnadu Dr. M.G.R. Medical University in the partial fulfillment of the requirement for award of Master of science in Nursing.I request you to go through the items and give your valuable suggestions and opinions to develop the content validity of the tool. Kindly suggest modifications, addition and deletions if any in the remarks column.

Thanking You,

Place: Chunkankadai. Yours sincerely,

Date: Stephy S. Godfrey.

ENCLOSURE:

1. Problem statement, objectives, and hypothesis of the study.
2. Demographic profile.
3. Via Christi Breastfeeding Assessment Scale.
4. Evaluation Proforma.

ANNEXURE IV

EVALUATION CRITERIA CHECKLIST FOR VALIDATION

The expert is requested to go through the following criteria for evaluation. Three columns are given for responses and a column for remarks. Kindly please tick mark in the appropriate columns and give remarks.

Interpretation column:

Column I – meets the criteria.

Column II - Partially meets the criteria.

Column III – does not meet the criteria.

S. NO	CRITERIA	1	2	3	REMARKS
1.	Scoring -adequacy. -clarity. -simplicity.				
2.	Content -logical sequence. -adequacy. -relevance.				
3.	Language -Appropriate. -clarity. -simplicity.				
4.	Practicability -easy to score. -precise. -utility.				

Signature: **Any other suggestion:**

Name:

Designation:

Address :

ANNEXURE V

LIST OF EXPERTS VALIDATED THE TOOL

1. Dr. F. Caroline Felicia Mary. M.D. DGO.
   Consultant,
   Caroline John Hospital,
   NesamonyNager,
   Nagercoil – 629001.

2. Dr. Rosita, MD. DGO,
   Obstetrician and Gynecologist
   Government Medical College,
   Asaripallam.

3. Dr. Judie, M.Sc.(N) Ph. D., (N),
   Dean,
   SRM College of Nursing,
   Chennai.

4. Mrs. S. Suguna, M.Sc.(N),
   Reader,
   Nehru College of Nursing,
   Vallioor.

5. Mrs. Margret , M.Sc., (N)
   Reader,
   Annammal College of Nursing,
   Kulithurai.

ANNEXURE VI

CERTIFICATE OF EDITING

M. SAVARIAPPAN .M.A, B.Ed.
Rtd P.G. Assistant ENGLISH

ARULAGAM,
547, VALANAR STREET,
PUNNAI NAGAR
NAGERCOIL-629004.
KANYAKUMARI DISTRICT.

Date:13/01/2014.

TO WHOMSOEVER IT MAY CONCERN

Certified that the dissertation paper titled **"A pre experimental study to evaluate the effectiveness of Hoffman's exercise on level of breastfeeding among postnatal mothers with nipple defects in selected hospitals, Kanyakumari district"** by **Mrs. Stephy S. Godfrey** has been checked for accuracy and correctness of English usage and that the language used in presenting the paper is lucid, unambiguous, free of grammatical or spelling errors and apt for the purpose.

M. Savariappan
M. SAVARIAPPAN, M.A., B.Ed.,
Rtd. P.G. Asst. (English).
13-1-14

ANNEXURE VII

TOOL FOR DATA COLLECTION

PART I: STRUCTURED QUESTIONNAIRE TO COLLECT DEMOGRAPHIC VARIABLES

DEMOGRAPHIC DATA:

1. **Age of the mother at delivery**
    a) 18 - 22 yrs.
    b) 22 – 26 yrs.
    c) 26 – 30 yrs.
    d) > 30 yrs.

2. **Type of Delivery**
    a) Normal vaginal delivery
    b) Instrumental Delivery
    c) Caesarean Section

3. **Gestational weeks at time of delivery**
    a) <34 weeks
    b) 34 – 37 weeks
    c) > 37 weeks

4. **Education of the mother**
    a) Secondary
    b) Graduate
    c) Post Graduate

5. **Antenatal preparation of nipples**
    a) Done
    b) Not done

SECTION B:

VIA CHRISTI BREASTFEEDING ASSESSMENT TOOL TO ASSESS THE LEVEL OF BREASTFEEDING

	0	1	2	score
Latch-on	No Latch on achieved	Latch-on after repeated attempts	Eagerly grasped breast to latch on	
Length of time before latch-on and suckle	Over 10 min.	4-6 min.	0-3 min.	
Suckling	Did not suckle	Suckled but needed encouragement	Suckle rhythmically with lips flanged	
Audible Swallowing	None	Only if stimulated	Over 48 hours: Frequent	
Mom's evaluation	Not pleased	Somewhat pleased	Pleased	

Total Score _____

Interpretation of score

a) 0 – 2 : Inadequate
b) 3 – 6 : Moderate
c) 7 – 10 : Adequate

ANNEXURE VIII

PRACTICE COMPLIANCE CHECKLIST

ஹாஃப்மேன் பயிற்சி அட்டவணை

ஒவ்வொரு முறை ஹாஃப்மேன் பயிற்சி செய்தபின் கீழே உள்ள கட்டத்தில் (✔) செய்யவும்.

நாள்	1	2	3	4	5
1					
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ANNEXURE IX

FORMULAS USED FOR STATISTICAL ANALYSIS

DESCRIPTIVE STATISTICS

1. **Mean**

$$\overline{X} = \frac{\sum X}{N}$$

2. **Standard Deviation**

$$s = \sqrt{\frac{\sum (x - \bar{x})^2}{n - 1}}$$

INFERENTIAL STATISTICS

3. **Paired t test**

$$t = \overline{d} \times \sqrt{n} / s$$

4. **Chi - Square test**

$$\chi^2 = \Sigma (o-e)^2 / e$$

ANNEXURE X

CERTIFICATE OF STATISTICAL ANALYSIS

CERTIFICATE OF STATISTICAL ANALYSIS

TO WHOM SO EVER IT MAY CONCERN

Certified that the dissertation paper titled "**A pre experimental study to evaluate the effectiveness of Hoffman's exercise on level of breastfeeding among postnatal mothers with nipple defects in selected hospitals, kanyakumari district**done by **Mrs. Stephy S Godfrey,** has been checked for the accuracy in statistical analysis and interpretation and apt for its purpose.

Signature

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ANNEXURE XI

PHOTOGRAPH